

REMARKS

Reconsideration of this application, as amended, is respectfully requested.

THE SPECIFICATION

The specification has been amended to correct a minor grammatical error of which the undersigned has become aware. And it is respectfully requested that the amendment to the specification be approved and entered.

THE CLAIMS

Each of independent claims 1, 4 and 5 has been amended to clarify that in the multilayer piezoelectric actuator device of the present invention, a pair of external electrodes are provided on respective opposite sides of said laminated structure, as clearly supported by the disclosure throughout the specification and drawings.

In addition, claims 2-6 have been amended to clarify that the present invention comprises plural electrode layers, plural side surfaces, plural first composite layers, plural carbon papers and/or plural second composite layers (i.e., one on each side of the laminated structure), as also clearly supported by the disclosure throughout the specification and drawings.

Still further some minor amendments have been made to each of claims 1-10 to make minor grammatical improvements and/or to correct antecedent basis problems.

It is respectfully submitted that no new matter has been added to the claims, and it is respectfully requested that the amendments to the claims be approved and entered.

THE PRIOR ART REJECTIONS

Claims 1, 4 and 9 were rejected under 35 USC 102 as being anticipated by USP 5,818,482 ("Ohta et al"), and claims 5-7 were rejected under 35 USC 102 as being anticipated by USP 6,316,865 ("Riedel"). In addition, claims 8 and 10 were rejected under 35 USC 103 as being obvious in view of either of Ohta et al or Riedel with USP 5,406,164 ("Okawa et al"), and claims 2 and 3 were rejected as being obvious in view of Ohta et al in combination with common knowledge in the art. These rejections, however, are respectfully traversed.

In item 2 of the Office Action, the Examiner asserts that Ohta et al discloses a pair of external electrodes (25). Reference numeral 25 in Ohta et al, however, merely represents a single external electrode pattern. And even if the single external electrode pattern 25 were considered to include a pair of external electrodes, such "pair" of external electrodes are certainly not provided on respective opposite sides of the laminated structure of Ohta et al. (See, for example, Fig. 2 of Ohta et al.)

In item 2 of the Office Action, the Examiner also asserts that Ohta et al discloses a first composite layer (6) formed on the electrode layer and made of a conductive resin including a

first conductive material. Reference numeral 6 in Ohta et al, however, merely represents an adhesive agent, and there is no disclosure in Ohta et al of the composition of the adhesive agent 6. (See column 5, lines 17-18 of Ohta et al.) In addition, it is respectfully pointed out that the adhesive agent 6 in Ohta et al is provided between the piezoelectric actuator rows 4 and the substrate 3. (See Fig. 3 of Ohta et al.) Thus, unlike the first composite layer of the claimed present invention, the adhesive agent 6 of Ohta et al is not formed on the electrode layer of each of the external electrodes.

In item 3 of the Office Action, the Examiner asserts that Ohta et al discloses a carbon paper (5), and that an electrode layer and the carbon paper are adhered to each other by a first composite layer. It is respectfully pointed out, however, that reference numeral 5 in Ohta et al represents a frame which is bonded to the substrate 3 and to the oscillation plate 12. (See Fig. 3 of Ohta et al.) Thus, even if the frame 5 of Ohta et al were considered to correspond to a carbon paper, such "carbon paper" is certainly not adhered to the electrode layer 25 in the structure of Ohta et al - unlike the carbon papers of the claimed present invention which is adhered to the electrode layers by the first composite layers. In this connection, it is also pointed out that the present invention as recited in amended claim 4 comprises a pair of carbon papers respectively placed on the pair of external electrodes. And this features is also clearly not disclosed, taught or suggested by Ohta et al.

In item 4 of the Office Action, the Examiner asserts that Ohta et al discloses at column 7, lines 55-60 a first conductive material comprising at least one of Ag, Au, Pt, Pd, Cu, Ni, and C. It is respectfully pointed out, however, that column 7, lines 55-60 of Ohta et al merely discloses the material of the frame 5 - and not the material of a first composite layer formed on an electrode layer as according to the claimed present invention. In addition, it is also pointed out that the Examiner asserts in item 2 of the Office Action that it is reference numeral 6 (and not 5) in Ohta et al which corresponds to the first composite layer of the claimed present invention.

In view of the foregoing, it is respectfully submitted that Ohta et al clearly does not at all disclose, teach or even remotely suggest the structure of the present invention as recited in each of claims 1, 4 and 9.

In item 5 of the Office Action, the Examiner asserts that Riedel discloses a pair of external electrodes (13 and 13)¹, each of which comprises an electrode layer formed on a side surface of the laminated structure and a first composite layer formed on the electrode layer. It is respectfully pointed out, however, that the copper foils 12 and 13 of Riedel are formed on side surfaces of the supporting body 9. (See Fig. 1 and column 6, lines 19-22 of Riedel.) Thus, contrary to the Examiner's assertion, the copper foils 12 and 13 of Riedel clearly do not correspond to the

¹ Presumably, the Examiner intended to refer to reference numerals 12 and 13 of Riedel.

external electrodes of the claimed present invention which each include an electrode layer formed on a side surface of the laminated structure. In this connection, it is noted that in Riedel the laminated structures are stacks 3 and 4. And it is also respectfully pointed out that the Examiner has failed to point out any structure in Riedel corresponding to the first composite layer of the claimed present invention which is formed on the electrode layer of each of the external electrodes.

In item 5 of the Office Action, the Examiner also asserts that Riedel discloses a second composite layer (9) formed on the first composite layer. As pointed out hereinabove, however, the reference numeral 9 in Riedel merely represents a supporting body. And it is not at all understood how the supporting body 9 of Riedel could be considered to correspond to a second composite layer formed on each of first composite layers which are in turn formed on electrode layers which in turn are formed on side surfaces of a laminated structure, as according to the present invention as recited in claim 5.

In view of the foregoing, it is also respectfully submitted that Riedel clearly does not at all disclose, teach or even remotely suggest the structure of the present invention as recited in claim 5.

In item 6 of the Office Action, the Examiner asserts that Fig. 1 of Riedel discloses a multilayer piezoelectric actuator device wherein the electrode layer and second composite layer are adhered to each other by a first composite layer. As pointed out

hereinabove, however, the Examiner has failed to identify what structure in Riedel corresponds to the first composite layer. And it is also pointed out that even if the coating 36 shown in Fig. 2 of Riedel were considered to correspond to the first composite layer of the claimed present invention, the electrode layers (12 and 13) of Riedel are not formed on a side surface of the stacks 3 and 4 of Riedel. That is, even if the coating 36 were considered to correspond to the first composite layer of the claimed present invention, the electrode layers of Riedel would still not correspond to the electrode layers of the claimed present invention which are formed on side surfaces of the laminated structure.

Accordingly, it is respectfully submitted that Riedel clearly does not at all disclose, teach or even remotely suggest the structure of the present invention as recited in claim 6.

With respect to claims 2-3, 7, 8 and 10, moreover, it is respectfully submitted that these claims patentably distinguish over the cited references based on their dependence from above described patentably distinguishing claims 1 and 5, respectively.

And with respect to Okawa et al, moreover, it is noted that this reference has merely been cited for the disclosure therein of a granular shaped conductive material.

In view of the foregoing, it is respectfully submitted that the present invention as recited in each of amended claims 1-10 patentably distinguishes over the cited references, taken singly or in any combination, under 35 USC 102 and 35 USC 103.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,



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